

Abstract Submitted
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Impact production of carbon clusters by use of a light-gas gun to simulate the impact reactions by asteroids in space TETSU MIENO, Dept. Physics, Shizuoka Univ., SUNAO HASEGAWA, ISAS, JAXA, KAZUTAKA MITSUISHI, NIMS, Tsukuba — In the universe, asteroid collisions to satellites and planets were frequent and made big reactions on the surface of the satellites. Concerning with Titan (one of Saturn's moons), we believe that many kinds of carbon clusters, hydrocarbon molecules and amino-acids have been produced by frequent asteroid's impacts. Because there are huge cold methane seas under nitrogen atmosphere, asteroid impacts resulted in production of many kinds of carbon clusters, being stored in cold and dark methane seas. In order to simulate this impact reaction, a 2-stage light-gas-gun is used. [1] A polycarbonate ball (or a metal ball) is injected into a pressured target chamber to collide with an aluminum target (or a hexane + aluminum target) in 1 atm of nitrogen gas with speed of about 6 km/s. After the impact reaction, the produced sample is analyzed by a TEM etc. As a result, we successfully confirm production of balloon like nano-carbon clusters, metal-capsulated carbon particles, carbon nanotubes and fullerenes. Therefore, we believe that clusters were produced by the impact reactions and stored on Titan.

[1] T. Mieno, S. Hasegawa, Appl. Phys. Exp. 1 (2008) 067006.

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